PTO/SB/21 (09-04)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM

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Total Number of Pages in This Submission: 5

Application Number	09/823,429
Filing Date	March 30, 2001
First Named Inventor	Sanjay K. Agrawal
Art Unit	2151
Examiner Name	Karen C. Tang
Attorney Docket Number	CISCP539

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
  - ☐ Reply to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
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- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☑ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☑ Other Enclosure(s) (please Identify below):
  - Return Postcard

Remarks

The Commissioner is authorized to charge any additional fees to Deposit Account 50-1652.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Cindy S. Kaplan, Attorney at Law		
Signature			
Printed name	Cindy S. Kaplan		
Date	December 10, 2007	Reg. No.	40,043

CERTIFICATE OF TRANSMISSION/MAILING

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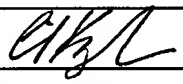
Signature			
Typed or printed name	Cindy S. Kaplan	Date	December 10, 2007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appln. No.	:	09/823,429	Confirmation No.:	9399
Applicant	:	SANJAY K. AGRAWAL		
Filed	:	March 30, 2001		
TC/A.U.	:	2151		
Examiner	:	Karen C. Tang		
Docket No.	:	CISCP539		
Customer No.	:	26541		
Title	:	METHOD AND APPARATUS FOR ESTIMATING PERIODIC WORST-CASE DELAY UNDER ACTUAL AND HYPOTHETICAL CONDITIONS USING A MEASUREMENT BASED TRAFFIC PROFILE		

Commissioner for Patents
P.O. Box 1450
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RESPONSE TO NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF

Sir:

In response to the Notification of Non-Compliant Appeal Brief mailed November 28, 2007, appellant submits herewith a revised Summary of Claimed Subject Matter (pages 5-6 of Appeal Brief). As requested in the Notification, the Summary has been revised to include reference to the independent claims. Reference to the specification by page and line numbers, and to the drawings was included in the original Summary.

Respectfully submitted,

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V. SUMMARY OF CLAIMED SUBJECT MATTER

The claims relate generally to a method and apparatus for estimating worst-case delay for a traffic aggregate.

Traffic aggregate refers to a class or label on which traffic is classified and queued. The traffic aggregate has an associated bandwidth (rate), which may be a maximum average bandwidth that has been agreed upon by a customer and service provider (e.g., in a Service Level Agreement (SLA) (e.g., negotiated rate)). (Specification, page 7, line 13 – page 8, line 5). (Claims 1, 11, 14, and 23)

The provider typically polices customer traffic and traffic that exceeds the SLA is dropped, reclassified, or otherwise dealt with in accordance with the SLA. After policing, traffic is queued and sent out of the apparatus (e.g., router) on an output link. The output link has an associated bandwidth referred to as an output link bandwidth. Multiple queues can share an output link, with each queue allotted a share of the output link bandwidth. (Specification, page 8, lines 6–14). The allocated output link bandwidth is greater than or equal to the associated rate of traffic to prevent the queue from overflowing. (Specification page 18, line 8-11). (Claims 1, 9, 11, 14, 20, 23, 25, 27)

Referring to Fig. 1, traffic from customers A, B, and C arrives at a router and each traffic stream is policed according to the applicable SLA by policers 10, 11, and 12. After policing, each of the traffic streams has been constrained so that it does not exceed the bandwidth specified in the SLA. The traffic streams are sent to queue 120 and packets are scheduled and sent out of the queue. Queue 120 is coupled to an output link having a link capacity apportioned among the various queues associated with the output link. (Specification, page 9, lines 3–18). (Claim 11)

A periodic worst case delay is calculated for a traffic aggregate, such as Customer A. The traffic is monitored and the arrival time and packet size of each packet arriving at the corresponding queue is recorded over an interval of time. A burst-rate traffic profile is calculated. The profile includes a rate parameter r and a burst parameter b. The value of the rate parameter is set to the associated rate (e.g., negotiated rate) for the traffic. The burst parameter is calculated based on the associated rate. A periodic worst-case delay is calculated by dividing the burst

parameter by the allocated bandwidth. (Specification page 9, line 19 – page 10, line 11). (Claims 1, 9, 11, 14, 20, 23, 25, 27, 29, 31)

In one embodiment, the effect of a change in bandwidth allocation by the provider can be calculated for a set of traffic data. A predicted worst-case delay is calculated by dividing the burst parameter (based on the associated rate) by a hypothetical bandwidth allocation. A service provider can use this value to determine how much additional bandwidth to allocate to a class to achieve a desired decrease in delay. In another embodiment, the rate parameter can be set to a hypothetical negotiated rate and similar calculations performed. (Specification, page 11, lines 10-17, page 20, lines 7-16, Fig. 11).

The periodic worst-case delay at each node in a network can be calculated as previously described, and the periodic worst-case delay at each node in a path can be added together to calculate a periodic worst-case delay for the path. (Specification, page 11, lines 6-9, page 19, line 16–page 20, line 2, Fig. 10). (Claims 9, 20, 25, 29, 31)

Figure 8 illustrates a plot including a burst-rate traffic profile, having y-intercept b and slope r, referred to by reference number 820. A cumulative bandwidth line 810 has a slope equal to the allocated bandwidth for the queue (the portion of the total link capacity allotted to the queue), and y-intercept 0. Line 810 represents the total amount of traffic that can be sent over the output link from a given class queue for a given customer versus time. (Specification, page 18, lines 4-8, Fig. 8).

An error of data from the burst-rate traffic profile may be calculated. If the error is unacceptable, a new burst parameter is calculated from previously collected data or a new set of data. In this manner, the burst parameter only needs to be recalculated when the current burst and rate parameters fail to fit the current traffic profile. (Specification, page 19, lines 6-14, Fig. 9).